SITE ASSESSMENT REPORT
FOR
SANITARY TRANSFER AND LANDFILL SITE
DELAFIELD, WAUKESHA COUNTY, WISCONSIN

U.S. EPA ID:
SSID:
TDD: T05-9312-011
PAN: EWI0420SAA

MAY 6, 1994

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International Specialists in the Environment

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1.0 INTRODUCTION

On December 31, 1993, the United States Environmental Protection Agency (U.S. EPA) tasked the Ecology and Environment, Inc. (E & E), Technical Assistance Team (TAT) under Technical Direction Document (TDD) number T05-9312-011, to conduct a site assessment at the Sanitary Transfer and Landfill (STL) site. The site assessment included groundwater sampling. Specifically, the TAT was tasked to collect residential well samples both upgradient and downgradient of the facility in Delafield, Waukesha County, Wisconsin.

2.0 SITE BACKGROUND

2.1 Site Description

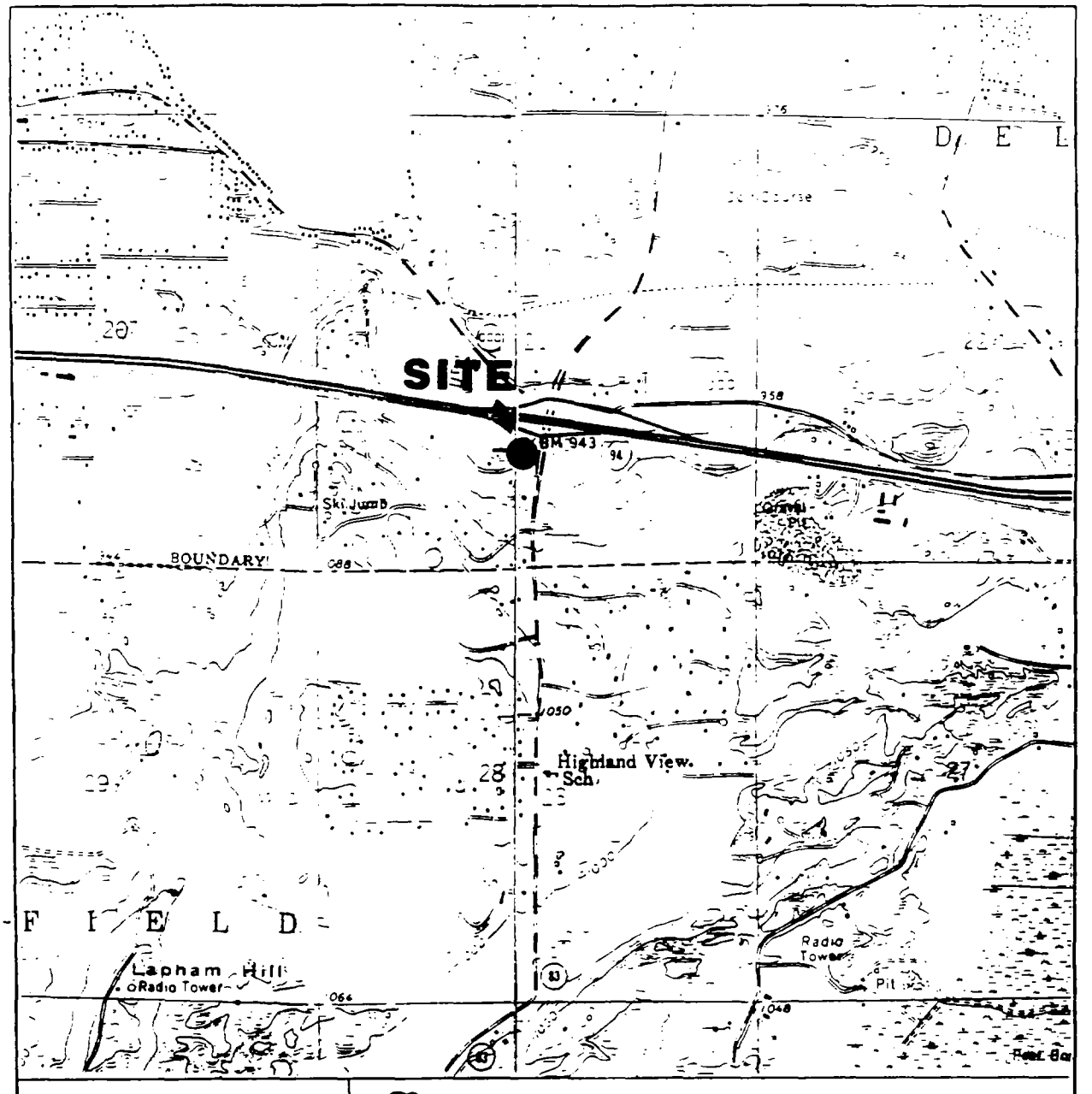
The site is a closed solid waste landfill located on approximately 138 acres of land in Delafield, Wisconsin (see Figure 1 for site location map). The site is located in the southwest quarter of the northwest quarter of Section 21, T.7N., R.18E. (coordinates 43°3'3" north and 88°21'23" east). The site is bordered on the south, southeast, and west by residential developments. A subdivision is located directly adjacent to the site's boundary. Immediately north of the site is a frontage road located adjacent to Interstate Highway I-94 (See Figure 2 for site features map). The site is located on a groundwater divide. Although groundwater flow is northerly, components of flow are directed northeast and northwest.

The property, as well as the area of waste disposal, are L-shaped. The disposal area is located along the northern and western portions of the property. On August 20, 1982, the Wisconsin Department of Natural Resources (WDNR) provided conditional approval for the landfill's closure, and the area of waste disposal occupied 35 acres at that time.

2.2 Site History

The site was privately owned and operated and began accepting waste in approximately 1955. WDNR issued STL a disposal facility license number (719) in 1969. Between 1955 and 1979, approximately 2.2 million cubic yards of refuse was disposed of at the landfill. At the time of closure, approximately 2.5 to 3 million cubic yards of waste (including daily cover) is estimated to have been disposed of at the facility. WDNR documents indicate that STL accepted municipal, commercial, and industrial wastes. Operations also included waste pickup and hauling.

Unauthorized disposal of waste at the landfill was discovered by WDNR during an inspection on August 26, 1975. WDNR prepared to respond to the STL site on April 6, 1977, because the potential for groundwater contamination was determined to be high at this



LEGEND

Quadrangle Location

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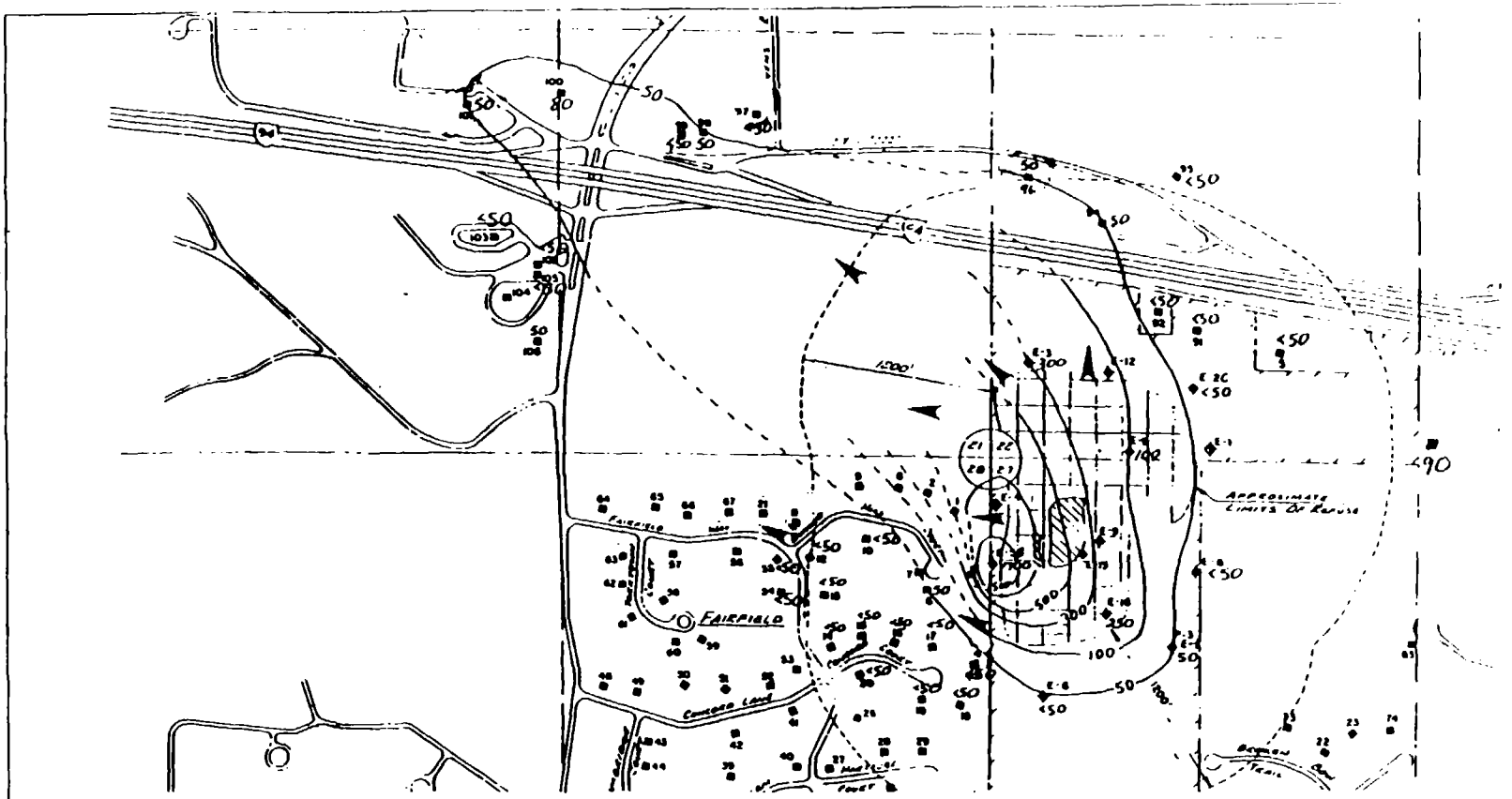
Region V
111 W. Jackson Blvd., Chicago, Illinois 60604

TITLE: Site Location Map		FIGURE #: 1
SITE: Sanitary Transfer and Landfill		SCALE: 1:24,000
CITY: Delafield	STATE: Wisconsin	FAN: EWI0420SAA
SOURCE: Topographical Map Hartland, Wisconsin		DATE: 3-28-94
		REVISED: 1971, 1976



LEGEND

- Section Line
- Quarter Section Line
- Present Fill Area
- In Place Refuse
- Property Boundary Line
- Direction of groundwater flow
- Groundwater monitoring well (E) and Piezometer (P)
- Boundary meets state statute NR112
- 23 Residence and/or location of private well (Number coincides with water sample number)

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Region V

TITLE	Site Features Map
SITE	Sanitary Transfer and Landfill
CITY	Delafield
STATE	Wisconsin
FIGURE #	2
SCALE	1" = 830'
PAN	EWI0420SAA

site. This determination was made because of the character of surfical deposits, the unconfined character of the groundwater,the extent of private wells in the shallow aquifer, and the existence of a groundwater divide allowing contaminants to move in all directions. WDNR also expected that leachate would continue to migrate if the waste volume was not reduced and a leachate collection system was not installed.

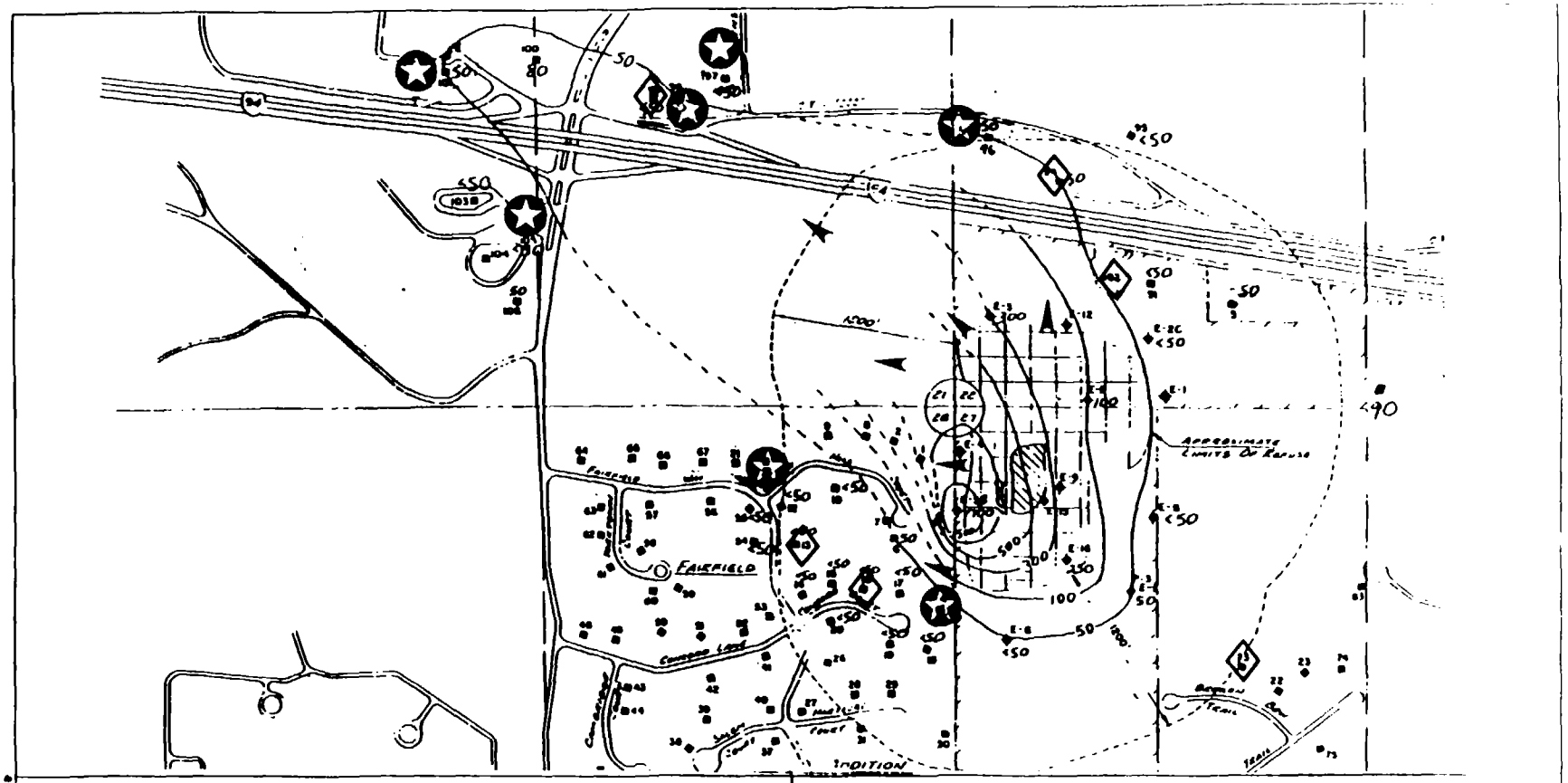
In a letter to WDNR, July 10, 1987, the operator utilized funds from the remaining escrow account for the installation of a leachate collection system as well as transportation and disposal. On August 7, 1991, the operator of the landfill, R.W. Nickel, notified WDNR that he planned to discontinue leachate removal from the site on September 30, 1991. As a result, temporary emergency actions were taken by WDNR to continue leachate hauling and disposal. According to a 1992 WDNR screening site assessment report, discontinuing leachate removal from the landfill could potentially cause further migration of the contaminants to area groundwater and could affect nearby existing residential water supplies. Mr. Nickel provided water supplies to previously contaminated wells by constructing two new deep wells to replace the contaminated water. The alternates were supplied on December 11, 1979 and May 5, 1981.

WDNR site files indicate the emission of toxic gases from the facility's landfill gas venting systems. WDNR also detected vinyl chloride in the gas emanating from the landfill. In addition, WDNR collected residential well samples during a site screening investigation on May 26 and May 27, 1992. The samples were analyzed for volatile organic compounds (VOCs), target analyte list (TAL) metals, priority pollutants, and polychlorinated biphenyls (PCB)/pesticides. High concentrations of manganese, barium, iron, potassium, sodium, calcium, and beryllium were also detected in the samples.

The TAT was tasked by the U.S. EPA to evaluate the potential threat to human health and welfare from groundwater contamination near the STL site.

3.0 SITE ASSESSMENT

On February 17, 1994, TAT members (TATMs) William Sass and Paula Abatie met U.S. EPA On-Scene Coordinator (OSC) Brad Benning and WDNR hydrogeologist Sharon Schaver to collect residential well samples upgradient and downgradient of the landfill (See Figure 3 for sample location map, and see Table 1 for residential well sample locations). Twenty samples were collected from nearby residences and businesses, including a trip blank, a field blank, a duplicate sample, and a matrix spike/matrix spike duplicate (MS/MSD). The portion of each sample being submitted for VOC analysis was collected before water softeners or filters by allowing the valve or faucet to run for several minutes until the



LEGEND

- Inorganic Collection
- Volatile and Inorganic Collection

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Region V

TITLE: Sample Location Map	FIGURE #: 3
SITE: Sanitary Transfer and Landfill	SCALE: 1" = 830'
CITY: Delafield STATE: Wisconsin	PAN: EWI0420SAA

Table 1
Residential Well Sample Locations
February 17, 1994

Sanitary Transfer and Landfill
Delafield, Wisconsin

Sample Number	Address	Sample Parameter
PW102	2675 Sun Valley	Inorganic
PW102F	2675 Sun Valley	Inorganic & VOC
PW101	2400 Milwaukee	Inorganic
PW101F	2400 Milwaukee	Inorganic & VOC
PW98	2715 Clover St.	Inorganic & VOC
PW96	N15 W30921 Highway CCC	Inorganic & VOC
PW94	W307 N1497 Highway CCC	Inorganic
PW94K	W307 N1497 Highway CCC	Inorganic
PW94F	W307 N1497 Highway CCC	Inorganic
PW4	N9 W31054 Concord Ct.	Inorganic & VOC
PW99	2711 Clover St.	Inorganic
PW00	2711 Clover St.	Inorganic & VOC
PW11 (MS\MSD)	N11 W31230 Bunker Hill	Inorganic & VOC
PW16	N931104 Concord Ct.	Inorganic
PW200 (DUP)	N931104 Concord Ct.	Inorganic & VOC
PW73	W30658 N Broken Bow Trail	Inorganic
PW13	W311 N1052 Fairfieldway	Inorganic
PW92	N14 W30795 S. Service Rd.	Inorganic

pump turned on in order to purge stagnant water.

At 1045 hours, sample PW102 was collected inside a building located at 2675 Sun Valley. The sample had an unidentifiable odor. At 1115 hours, sample PW101 was collected at 2400 Milwaukee Street. Sample PW98 was collected at 2715 Clover Street. TATMs collected sample PW96 from a sink at N15 W30921 Highway CCC at 1220 hours. Sample PW94 was collected at 1245 hours from the kitchen sink at W307 N1497 Highway CCC. Two additional samples were collected from this location (see Appendix A for Field Sample Data Sheets). Sample PW94F was collected before water passed through the softener system, and sample PW94K was collected after water passed through the softener to assess the capability of the filter to collect manganese.

Sample PW4 was collected at 1345 hours from a spigot at N9 W31054 Concord Street. The TATMs collected sample PW99 from the kitchen sink at 2711 Clover Street at 1525 hours. The field blank PW00 was collected from this residence at 1540 hours; the field blanks consisted of deionized water. Sample PW11 was collected at N11 W31230 Bunker Hill at 1615 hours and was used as the matrix spike/matrix spike duplicate samples. Sample PW200 served as a duplicate collected from this residential well. The TATMs collected sample PW16 at 1700 hours at N931104 Concord Court.

The site background sample, PW73, was collected from a spigot at W30658 North Broken Bow Trail at 1735 hours. Sample PW13 was collected at W311 N1052 Fairfield Way at 1800 hours. The final sample, PW92, was collected from a sink in the kitchen of N14 W30795 South Service Road at 1830 hours. When sampling activities were completed, the TATMs packaged the samples for delivery to the laboratory. Eight samples and one trip blank were analyzed for volatile organics (method 8240) and fourteen were analyzed for inorganic metals (methods 6000 and 7000 series). The samples were delivered to IEA Laboratories of Schaumburg, Illinois, and analyses were performed under TDD number T05-9312-601.

4.0 ANALYTICAL RESULTS

A total of 18 samples were collected from residential wells near the site in Delafield, Wisconsin. Selected samples were analyzed for VOCs and metals.

All VOCs were detected at concentrations below the U.S. EPA Maximum Contaminant Level (MCL) for drinking water. Table 2 indicates the levels of chloromethane and 1,2-dichloroethane detected in four samples. A common laboratory contaminant, methylene chloride, was detected in the samples (see Table 2 for summary of volatile organic analytical results, and Appendix B for complete analytical results). The resulting values may be

Table 2
Summary of Volatile Organic Analytical Results
February 17, 1994

Sanitary Transfer and Landfill
Delafield, Wisconsin

Sample Number	Chloromethane	Methylene Chloride	1,2-Dichloroethane
PW00	ND	8	2
PW11 (MS/MSD)	4	6	4
PW200 (DUP of PW11)	3	5	3
PW102	2	6	2
PW101	ND	4	2
PW98	3	4	3
PW96	2	10	5
PW4	ND	3	2
Trip Blank	2	3	ND

All samples were analyzed by IEA Laboratories in Schaumburg, Illinois, under TAT analytical TDD number T05-9312-601.

Units = parts per billion (ppb)
ND = not detected
MS/MSD = matrix spike/matrix spike duplicate
DUP = duplicate

due to field sampling or laboratory contamination. No VOCs were detected in any other samples.

Three samples contained manganese (Mn) above the MCL and Removal Action Level (RAL) of 200 parts per billion (ppb); PW98 (620 ppb), PW96 (420 ppb), and PW99 (700 ppb). However, there were detectable levels of nitrate (NO_3) and nitrite (NO_2) (1,000 ppb) in all samples, with the exception of samples PW4, PW94, and PW99. Iron (Fe) was present in several samples, although it was not detected at concentrations above the water quality criteria for drinking water of 300 ppb. The pH readings of the samples were within the MCL range of 5 to 9 for all samples analyzed. Other inorganics detected in the samples include calcium (Ca), magnesium (Mg), potassium (K), chlorine (Cl), sulfate (SO_4), sodium (Na), and orthophosphate (orthoPO$_4$) (see Table 3 for summary of inorganic analytical results). The results identified during this assessment were significantly below the levels that were identified by WDNR in 1992.

Ammonia was identified below the minimal risk level (10,000 ppb) for long-term exposure to drinking water in all samples. Two samples were identified as being near the risk level; sample PW98 (8200 ppb) and PW99 (7800 ppb).

5.0 DISCUSSION OF POTENTIAL THREATS

The site assessment conducted at the site was conducted to evaluate the potential threat to public health and the environment. Conditions at the site that would warrant a removal action, as set forth in paragraph (b)(2) of Section 300.415 of the National Contingency Plan (NCP), include:

> **Actual or potential contamination of drinking water supplies to sensitive ecosystems.**

Analysis of groundwater samples collected upgradient and downgradient of the STL site detected the presence of manganese at concentrations above the MCL (200 ppb). According to the Agency for Toxic Substances and Disease Registry (ATSDR), studies have shown that people who drink water with above average levels of manganese experience weakness, stiff muscles, and trembling hands. Studies have also shown that very high levels of manganese in food or water can cause changes in the brain which may potentially result in permanent brain injury; high levels in food may also increase the chances of developing cancer, though, little evidence supports this finding. The EPA determined that manganese is not a human carcinogen. Another study within the ATSDR indicated the probability of birth defects is increased with high exposure. In addition, manganese in drinking water may contribute to skin and eye irritation.

Table 3
Summary of Inorganic Analytical Results
February 17, 1994

Sanitary Transfer and Landfill
Delafield, Wisconsin

Sample Number	Mn	Fe	NO_2/NO_3	pH	NH_4	Cl
PW102	ND	64	520	7700	370	43000
PW102F	ND	---	---	---	---	---
PW101	ND	ND	4400	7400	ND	96000
PW101F	ND	---	---	---	---	---
PW98	620	120	470	7200	8200	170000
PW96	420	ND	60	740	ND	260000
PW4	ND	ND	ND	7800	ND	ND
PW00	ND	ND	ND	6.3	ND	ND
PW11 (MS/MSD)	ND	ND	3700	7900	84	80000
PW94	63	290	ND	7500	ND	93000
PW94F	52	---	---	---	---	---
PW94K	ND	---	---	---	---	---
PW99	700	960	ND	7400	7800	180000
PW99F	ND	---	---	---	---	---
PW200 (DUP)	ND	90	3700	7900	ND	82000
PW16	22	56	140	7800	ND	26000
PW73	ND	85	1600	7800	84	47000
PW13	ND	ND	250	7800	460	ND
PW92	ND	ND	730	7700	84	280000

All samples were analyzed by IEA Laboratories in Schaumburg, Illinois, under TAT analytical TDD # T05-9312-601. ND = not detected above method detection limit; Units = parts per billion (ppb); pH = standard units; MS/MSD = matrix spike/matrix spike duplicate; DUP = duplicate

Table 3
Summary of Inorganic Analytical Results
February 17, 1994

Sanitary Transfer and Landfill
Delafield, Wisconsin

Sample Number	Ca	Mg	K	Na	SO_4	OrthoPO_4
PW102	68000	28000	8300	4300	13000	ND
PW102F	---	---	---	---	---	ND
PW101	99000	44000	3800	50000	23000	ND
PW101F	---	---	---	---	---	ND
PW98	110000	58000	9700	78000	29000	ND
PW96	120000	55000	2200	110000	20000	ND
PW4	42000	18000	3500	29000	39000	ND
PW00	ND	ND	ND	ND	ND	ND
PW11 (MS/MSD)	74000	34000	1800	44000	25000	ND
PW94	120000	57000	1900	30000	39000	ND
PW94F	---	---	---	---	---	ND
PW94K	---	---	---	---	---	ND
PW99	120000	61000	9000	84000	34000	ND
PW99F	---	---	---	---	---	ND
PW200 (DUP)	72000	33000	1600	42000	25000	ND
PW16	54000	38000	2000	12000	39000	ND
PW73	85000	42000	1700	20000	25000	ND
PW13	56000	31000	2400	15000	42000	ND
PW92	110000	60000	2600	60000	410	ND

All samples were analyzed by IEA Laboratories in Schaumburg, Illinois, under TAT analytical TDD # T05-9312-601.
Units = parts per billion (ppb); DUP = duplicate
ND = Not detected above method detection limit MS/MSD = matrix spike/matrix spike duplicate

6.0 SUMMARY

Observations documented during the site assessment indicate that the conditions at the Sanitary Transfer and Landfill site constitute a substantial endangerment to public health and welfare. This conclusion is based on observations as set forth in the National Contingency Plan.

According to 40 CFR 300.415 section 5(d)(9), the appropriate removal action for this site consists of a provision of an alternative water supply where necessary immediately to reduce exposure to contaminated household water and continuing until such time as local authorities can satisfy the need for a permanent remedy.

Appendix A

Field Sample Data Sheets For Residential Well Sampling

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sarr / Paula Abatie EPA Site Number _____

Sample No. PW92 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1830

Name of Resident Helen Stefan

Address N14 W30195 South Service Road

Phone No. (414) 646-2205 Map I.D. No. PW92

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: (YES) NO

Description of Sample Location Sample from sink & began purging 1830
Sample @ 1835 pm. Collected 1 sample from sink in Kitchen
Inorganics only

Sample Container: [ ] 40ml Vial; [✓] 1L Plastic

Storage 4°C (3)

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass / Paula Abate EPA Site Number _____

Sample No. PW13 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1800

Name of Resident Mr. & Mrs Degonda

Address _____

Phone No. _____ Map I.D. No. PW13

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: YES (NO)

Description of Sample Location Began purging @ 1755, sampled @ the well point Inorganics only. P Abate 2/17/94

Sample Container: [ ] 40ml Vial; [✓] 1L Plastic

Storage 4°C (3)

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass / Paula Abate EPA Site Number _____

Sample No. PW73 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1735

Name of Resident 2/17/94 Abate J. Hathway Mr. Winter

Address W30658 NO Broken Bow Trail

Phone No. (414) 968-3584 Map I.D. No. PW73

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: (YES) NO

Description of Sample Location 0530 began purging, collected sample @ 1735; sample collected prior to softner, background sample

Sample Container: [ ] 40ml Vial; [✓] 1L Plastic

Storage 4°C (3)

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Saas/Paula Abaire EPA Site Number _____

Sample No. PW 16 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1700

Name of Resident R. Rummel

Address N93W1104 Concord Ct

Phone No. _____ Map I.D. No. PW 16

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: (YES) NO

Description of Sample Location Water softner not in service, Purging began @ 4:55 pm. Pump turned on & off during purging. Purging stopped @ 5:10 pm. Collected for inorganics only.

Sample Container: [ ] 40ml Vial; [✓] 1L Plastic

Storage _____ (3)

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors _____ EPA Site Number _____

Sample No. *PW11 / PW200▲ Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1615

Name of Resident Joni Oroka

Address 11 W312 30 Bunker Hill

Phone No. (414) 646-4306 Map I.D. No. PW11

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: YES NO

* PW11 - Matrix Spike (MS)
PW11 - Matrix Spike Duplicate (MSD)
▲ PW200 duplicate of well PW11

Description of Sample Location (1) Collect (3) VOA's & (3) Unorganics (MS) Matrix Spike, Matrix Spike dupe (MSD)
Began purging at 4:10pm, Collected samples @ 1615.
* Refer to Chain of Custody for detail of matrix spike & dupes.

Sample Container: [✓] 40ml Vial; [✓] 1L Plastic PW11: ~~MS~~ MS 3 VOA's;
P Abulic 2/17/94

Storage _____

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass / Paula Abate EPA Site Number _____

Sample No. PW99 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1525

Name of Resident R. Fera

Address 2711 Clover Street

Phone No. (414) 646-4320 Map I.D. No. PW99

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: (YES) NO

Description of Sample Location have water softner. Sample is collected from well in kitchen. Began pumping at 0325pm. H2O was warm then went cold. After softner, sample collected at 330pm for inorganics. ~~330pm~~ 325; 330pm inorganics collected. At 340 dups were collected (DI water).

P. Abate 2/17/94

Sample Container: [ ] 40ml Vial; [✓] 1L Plastic

Storage 4°C

~~(3)~~ (4)

* PW00 duplicate
DI water
3 - 1L inorganics
3 - VOAs 40mL

* PW00 X 3 samples
Inorganics 3 - 1L
VOA's 3 - 40mL

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Mrs. Dulak & Bill Sasso EPA Site Number _____

Sample No. PW4 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1345

Name of Resident Mark Dulak

Address N9 W31054 Concord Ct.

Phone No. (414) 646-4258 Map I.D. No. PW4

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: (YES) NO

Description of Sample Location Mrs. Dulak collected samples - 3 1L Poly Plastic and 1-250 Plastic for VOA's. Sample(s) were collected prior to H2O softner. VOA's were collected from the 250ml plastic collected by Mrs. Dulak.

Sample Container: [✓ 40ml Vial; (3) [✓ 1L Plastic (3)

Storage 4°C

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass / Paula Abate EPA Site Number _____

Sample No. PW94 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1245 Inorganics
1250 Sample from Kitchen

Name of Resident James Brown

Address W307 N1497 Hwy CCC

* PW94-F
* PW94-K

Phone No. (414) 646-2351 Map I.D. No. PW94

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing possible plastic (PVC?)
part above pump was replaced approx 4 years ago.

Water Softner: (YES) NO

Description of Sample Location Softner, then purifier; Before softner and after softner (Mn) Began purging at 1233. Aqua-Cleer - Reverse osmosis drinking water system - this feeds the kitchen. Carbon filters - haven't changed filters in only 1 yr. This system removes everything. (1) Carbon Filter (2) Particulate filter (3) Reverse Osmosis filter. Purge stopped @ 1245. Inorganics & VOA's were collected from a hose, also MS sample

Sample Container: [ ] 40ml Vial; [√] 1L Plastic (5)

Storage 4°C

* PW94F - Before softner.
PW94K - collected in kitchen after softner

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass / Paula Abate EPA Site Number _____

Sample No. PW96 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1220

Name of Resident Mr. Todd / Mrs. Mr. Giesie.

Address N15 W30921 Hwy CCC.

Phone No. _____ Map I.D. No. _____

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: YES (NO)

Description of Sample Location Softner is off. Purge began @ 1203, sample was collected from the sink. Not at or near the pump. NO PCB sample was collected. Sample was purged for 15mins. NO Smell in water. Completed purging at 12:20pm

Sample Container: [✓] 40ml Vial; [✓] 1L Plastic

Storage 4°C (3) (3)

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sasse / Paula Abate EPA Site Number _____

Sample No. RW98 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1145 AM

Name of Resident _____

Address Mr. & Mrs. Ziach 2715 Clover Street

Phone No. _____ Map I.D. No. RW98

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: YES (NO)

Description of Sample Location ND Water Softner, ND Mn sample, water port was purged approx 5 minutes sampled for VOA's & inorganics. Pump went on & off prior to sampling during purging. Water softner has been disconnected Completed purging at 1140.

Sample Container: [√] 40ml Vial (3); [√] 1L Plastic (3)

Storage _____

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass / Paula Abatie EPA Site Number _____

Sample No. PW101 Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1115 AM

Name of Resident Shoney's Restaurant

Address 2400 Milwaukee Street

Phone No. (414) 646-4242 Map I.D. No. PW 101

Depth of Well _____ Pump Type _____

Well Diameter _____ Well Casing _____

Water Softner: YES NO

Description of Sample Location VOA's, inorganics and Mn. OSC Benning collected the sample. Sample port was purged prior to collection. During purging, pump turned on & off during purging. H2O does not have a smell.

Sample Container: [✓] 40ml Vial (3); [✓] 1L Plastic (4)

Storage 4°C

FIELD SAMPLE DATA SHEET
FOR
RESIDENTIAL WELL SAMPLING

TDD NO. T05-9312-011 PAN NO. EWI 0420SAA

Site Name Sanitary Transfer & Landfill County Waukeshaw State Wisconsin

Collectors Bill Sass Collected VOA's & inorganics EPA Site Number _____

Sample No. R PW-102 (Before filter) Date Collected 2/17/94

U.S. EPA Sample Tag No. _____ Time 1045AM

Name of Resident Amoco Standard

Address 2675 Sun Valley

Phone No. (414)6463997 Map I.D. No. PW-101 PW102

Depth of Well _____ Pump Type Submersible

Well Diameter 6" Well Casing SS Casing

Water Softner: YES (NO)

Description of Sample Location Well purged @ 10:15 AM start time. Weather Clear and sunny. Sample collected inside Bldg; non filter in place. Sampled prior to non filter - VOA's & inorganics. Well was purged approx 20 mins DI Blank collected on Sample. Sample H2O had an odor

Sample Container: [✓] 40ml Vial (3); [✓] 1L Plastic (4)

Storage 4°C

Appendix B

Analytical Results

ecology and environment, inc.
International Specialists in Environmental Sciences
[illegible] Westbrook Blvd.
Chicago, Illinois 60604
Tel: 312 663-9415 Fax: 312 663-1781

MEMORANDUM

DATE: March 28, 1994

TO: Yvette Anderson, Project Manager, E & E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E & E, Chicago, IL NF

THRU: David Hendren, TAT-Chemist, E & E, Chicago, IL

SUBJ: **Organic Data Quality Assurance Review**, Sanitary Landfill Site, Delafield, Waukesha County, Wisconsin.

REF: Analytical TDD: T059312601 Project TDD: T059312001
Analytical PAN: EWI0420AAA Project PAN: EWI0420SAA

The data quality assurance review of 9 drinking water samples collected from the Sanitary Landfill Site in Delafield, Wisconsin has been completed. Analysis for **Volatile Organics (VOA)** was performed by IEA Laboratories, Inc. located in Schaumburg, Illinois in accordance with U.S. EPA Method 524.2.

The samples were numbered as following:

TAT Sample #	Corresponding to =>	Laboratory Sample #
PW102		940242001
PW101		940242003
PW98		940242005
PW96		940242007
PW4		940242010
PW00		940242013
PW11		940242014
PW11MS/MSD		940242014MS/MSD
PW200		940242015

Data Qualifications:

I Holding Time: Acceptable

The samples were collected on 2/17/94 and analyzed on 3/2/94. The holding time criteria of 14 days from collection to analysis was satisfied.

II GC/MS Tuning: Acceptable

GC/MS ion abundance criteria using bromofluorobenzene (BFB) were acceptable.

III Calibration: Acceptable

A. Initial Calibration:

A 5-point initial calibration was performed prior to analysis. All average relative response factors were greater than 0.05. The percent relative standard deviation (%RSD) between response factors were less than 30%.

B. Continuing Calibration:

The percent difference (%D) between initial and continuing calibration were within the quality control criteria of less than or equal to 25%.

IV Method Blank: Qualified

A method blank was analyzed with the samples. No contaminants above the instrument detection limit (IDL) were detected. The trip blank however, was contaminated with Chloromethane (2ug/l) and Methylene Chloride (3ug/l). Oswer requires that sample values reported at less than 10 times the blank contamination level be flagged as undetected (U).

V Surrogate Recovery: Not Applicable

VI Matrix Spike/Matrix Spike Duplicates: Acceptable

The percent recoveries and relative percent difference (RPD) for the Matrix Spike/Matix Spike Duplicate (MS/MSD) were within the established quality control limits for all VOA samples.

VII Internal Standards: Acceptable

The established quality control criteria for the internal standard (IS) area counts was in the range of -50% to +100% from the associated calibration standard. Retention time for IS is within the ±30 second control limit.

VIII Overall Assessment of Data for Use

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance for Removal Activities" (OSWER 9360.4-01 April, 1990). Based upon the information provided, the data are acceptable for use with the above stated qualifications.

Data Qualifiers and Definitions

U - The material was analyzed for, but not detected. The reported detection limit is estimated because quality control criteria were not met.

ecology and environment, inc.

[illegible] West Jackson Boulevard
Chicago, Illinois 60604
Tel: 312 663-9415 Fax: 312 663-1831

MEMORANDUM

DATE: March 28, 1994

TO: Yvette Anderson, Project Manager, E&E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E&E, Chicago, IL NF

THRU: David Hendren, TAT-Chemist, E&E, Chicago, IL

SUBJ: **Inorganic Data Quality Assurance Review**, Sanitary Landfill Site, in Delafield, Waukesha County, Wisconsin.

REF: Analytical TDD: T059312601 Project TDD: T059312001
Analytical PAN: EWI0420AAA Project PAN: EWI0420SAA

The data quality assurance review of 14 drinking water samples collected from the Sanitary Landfill Site in Delafield, Wisconsin has been completed. Analysis for **Ammonia, Chloride, Nitrate/Nitrite, Sulfate, Orthophosphate, and Total Dissolved Solids** was performed by IEA Laboratories, Inc. located in Schaumburg, Illinois in accordance with U.S. EPA Methods 350.2, 325.3, 353.2, 375.3, 365.2, and 160.1 respectively.

The samples were numbered as following:

TAT Sample #	Corresponding to =>	Laboratory Sample #
PW102		940242001
PW101		940242003
PW98		940242005
PW96		940242006
PW94		940242007
PW4		940242010
PW99		940242011
PW00		940242013
PW11		940242014
PW200		940242015
PW16		940242016
PW73		940242017
PW13		940242018
PW92		940242019

Data Qualifications:

I **Sample Holding Time:** Acceptable

The sample was collected on 2/17/94 and analyzed between 2/24/94 and 3/4/94. The holding time criteria of 28 days from collection to analysis was satisfied.

II **Calibration:** Acceptable

Calibration was completed prior to analysis of the sample batch.

III **Method Blanks:** Acceptable

A method blank was analyzed with the samples. No contaminants were detected above the instrument detection limit.

IV **Interference Check Sample Analysis:** Acceptable

The Interference Check Sample (ICS) was within the control limits of 80-120% of the true values.

V **Matrix Spike/Matrix Spike Duplicate:** Acceptable

Spike Sample Analysis:
All Matrix Spike/Matrix Spike Duplicate recoveries were within the control limits of 80-120% for the analytes of interest.

VI **Optional Additional QC:**

Laboratory Control Sample Analysis: Acceptable
The quality control criteria of 80-120% were met for the control sample.

VII **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance For Removal Activities" (OSWER Directive 9360.4-01, April 1990).

Based upon the information provided, the data are acceptable for use.

ecology and environment, inc.

[illegible]
Chicago, Illinois 60604
Tel: 312 663-9415, Fax: 312 663-1731

MEMORANDUM

DATE: March 28, 1994

TO: Yvette Anderson, Project Manager, E&E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E&E, Chicago, IL NF

THRU: David Hendren, TAT-Chemist, E&E, Chicago, IL

SUBJ: **Inorganic Data Quality Assurance Review,** Sanitary Landfill Site, in Delafield, Waukesha County, Wisconsin.

REF: Analytical TDD: T059312601 Project TDD: T059312001
Analytical PAN: EWI0420AAA Project PAN: EWI0420SAA

The data quality assurance review of 19 drinking water samples collected from the Sanitary Landfill Site in Delafield, Wisconsin has been completed. Analysis for **Ca, Fe, Mn, K, and Na** was performed by IEA Laboratories, Inc. located in Schaumburg, Illinois in accordance with U.S. EPA Method SW-846-6010.

The samples were numbered as following:

TAT Sample #	Corresponding to =>	Laboratory Sample #
PW102		940242001
PW102F		940242002
PW101		940242003
PW101F		940242004
PW98		940242005
PW96		940242006
PW94		940242007
PW94F		940242008
PW94K		940242009
PW4		940242010
PW99		940242011
PW99F		940242012
PW00		940242013
PW11		940242014
PW200		940242015
PW16		940242016
PW73		940242017
PW13		940242018
PW92		940242019

Data Qualifications:

I **Sample Holding Time:** Acceptable

The sample was collected on 2/17/94 and analyzed on 2/24/94. The holding time criteria of 6 months for metals from collection to analysis was satisfied.

II **Calibration:** Acceptable

A. Initial Calibration:
Calibration results were within the established quality control limits of 90-110% of the true value for metals.

B. Continuing Calibration:
Calibration results showed that the control criteria of 90-110% for metals were satisfied.

III **Method Blanks:** Acceptable

A method blank was analyzed with the samples. No contaminants were detected above the instrument detection limit.

IV **Interference Check Sample Analysis:** Acceptable

The Interference Check Sample (ICS) was within the control limits of 80-120% of the true values.

V **Matrix Spike/Matrix Spike Duplicate:** Acceptable

Spike Sample Analysis:
All Matrix Spike/Matrix Spike Duplicate recoveries were within the control limits of 80-120% for the analytes of interest.

VI **Optional Additional QC:**

Laboratory Control Sample Analysis: Acceptable
The quality control criteria of 80-120% were met for the control sample.

VII **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance For Removal Activities" (OSWER Directive 9360.4-01, April 1990).

Based upon the information provided, the data are acceptable for use.

ecology and environment, inc.

[illegible]
[illegible] Illinois 60604
Tel 312 663-9415 Fax 312 663-1701

MEMORANDUM

DATE: March 28, 1994

TO: Yvette Anderson, Project Manager, E&E, Chicago, IL

FROM: Nabil Fayoumi, TAT-Chemist, E&E, Chicago, IL NF

THRU: David Hendren, TAT-Chemist, E&E, Chicago, IL

SUBJ: **Miscellaneous Data Quality Assurance Review,** Sanitary Landfill Site, in Delafield, Waukesha County, Wisconsin.

REF: Analytical TDD: T059312601 Project TDD: T059312001
Analytical PAN: EWI0420AAA Project PAN: EWI0420SAA

The data quality assurance review of 14 drinking water samples collected from the Sanitary Landfill Site in Delafield, Wisconsin has been completed. Analysis for pH was performed by IEA Laboratories, Inc. located in Schaumburg, Illinois in accordance with U.S. EPA Method 150.1.

The samples were numbered as following:

TAT Sample #	Corresponding to =>	Laboratory Sample #
PW102		940242001
PW101		940242003
PW98		940242005
PW96		940242006
PW94		940242007
PW4		940242010
PW99		940242011
PW00		940242013
PW11		940242014
PW200		940242015
PW16		940242016
PW73		940242017
PW13		940242018
PW92		940242019

Data Qualifications:

I **Sample Holding Time:**

The samples were collected on 2/17/94 and analyzed between 2/24/94 and 3/4/94. The OSWER Directive 9360.4-01 does not include criteria regarding holding times for this method.

II **Calibration:** Acceptable

The lab used check standard buffer solutions at pHs of 4.00, 7.00, and 10.00. The calibaration results did not vary by more than 0.05 pH.

III **Overall Assessment of Data for Use**

The overall usefulness of the data is based on the criteria outlined in "Quality Assurance/Quality Control Guidance For Removal Activities" (OSWER Directive 9360.4-01, April 1990).

Based upon the information provided, the data are acceptable for use.

IEA

Client: Ecology & Environment
EA Job #: CH940242
Project #: T05-9312-601

IEA-ILLINOIS (IL. CERT #100238)
VOLATILE COMPOUNDS
METHOD 524.2 Matrix: WATER
ug / L

Analyte	Lab ID	Dilution Factor (DF)	Method Blank	Client ID	PQL
		1	VW0302	PW102	
				40242	
				001	
		1	VW0302	PW101	
				40242	
				003	
		1	VW0302	PW98	
				40242	
				005	
		1	VW0302	PW96	
				40242	
				006	
		1	VW0302	PW4	
				40242	
				010	
o-Xylene		U	U	U	U	U	1
Styrene		U	U	U	U	U	1
Bromoform		U	U	U	U	U	1
Isopropylbenzene		U	U	U	U	U	1
1,1,2,2 Tetrachloroethane		U	U	U	U	U	1
1,2,3 Trichloropropane		U	U	U	U	U	2
n-Propylbenzene		U	U	U	U	U	1
2-Chlorotoluene		U	U	U	U	U	1
1,3,5-Trimethylbenzene		U	U	U	U	U	1
4-Chlorotoluene		U	U	U	U	U	1
1,2,4-Trimethylbenzene		U	U	U	U	U	1
tert-Butylbenzene		U	U	U	U	U	1
sec-Butylbenzene		U	U	U	U	U	1
1,3-Dichlorobenzene		U	U	U	U	U	1
p-Isopropyltoluene		U	U	U	U	U	1
1,4-Dichlorobenzene		U	U	U	U	U	1
1,2-Dichlorobenzene		U	U	U	U	U	1
n-Butylbenzene		U	U	U	U	U	1
1,2-Dibromo-3-chloropropane		U	U	U	U	U	4
1,2,4-Trichlorobenzene		U	U	U	U	U	1
Napthalene		U	U	U	U	U	1
Hexachlorobutadiene		U	U	U	U	U	1
1,2,3-Trichlorobenzene		U	U	U	U	U	1
Sample Received		2/21/94	2/21/94	2/21/94	2/21/94	2/21/94	
Sample Analyzed		3/2/94	3/2/94	3/2/94	3/2/94	3/2/94	

PQL = Practical Quantitation Limit

To obtain sample-specific quantitation limit, multiply the PQL by the Dilution Factor.

IEA
An Aquarion Company

Client: Ecology & Environment
IEA Job#: CH940242
Project #: T05-9312-601

IEA-ILLINOIS (IL. CERT #100238)
VOLATILE COMPOUNDS
METHOD 524.2
ug / L

Matrix: WATER

Analyte	Lab ID	Method Blank	Client ID: PW102	PW101	PW98	PW96	PW4	PQL	
		Dilution Factor (DF): 1	1	1	1	1	1		
		VW0302	40242 001	40242 003	40242 005	40242 006	40242 010		
Chloromethane		U	2 u	U	3 u	2 u	U	2	NF
Vinyl Chloride		U	U	U	U	U	U	1	
Bromomethane		U	U	U	U	U	U	2	
Chloroethane		U	U	U	U	U	U	2	
Trichlorofluoromethane		U	U	U	U	U	U	1	
1,1-Dichloroethene		U	U	U	U	U	U	1	
Methylene Chloride		U	6 u	4 u	4 u	10 u	3 u	1	NF
trans-1,2-Dichloroethene		U	U	U	U	U	U	2	
1,1-Dichloroethane		U	U	U	U	U	U	1	
2,2-Dichloropropane		U	U	U	U	U	U	1	
cis-1,2-Dichloroethene		U	U	U	U	U	U	1	
1,2-Dichloroethane		U	U	U	U	U	U	1	
Bromochloromethane		U	U	U	U	U	U	1	
Chloroform		U	U	U	U	U	U	1	
1,1 1-Trichlorethane		U	U	U	U	U	U	1	
Carbon Tetrachloride		U	U	U	U	U	U	1	
1,2-Dichloropropene		U	U	U	U	U	U	1	
1,2-Dichloroethane		2	2	3	5	2	1		
Benzene		U	U	U	U	1	U	1	
Trichloroethene		U	U	U	U	U	U	1	
1,2-Dichloropropane		U	U	U	U	U	U	1	
Dibromomethane		U	U	U	U	U	U	1	
Bromodichloromethane		U	U	U	U	U	U	1	
Trans-1,3-Dichloropropene		U	U	U	U	U	U	1	
Toluene		U	U	U	U	U	U	1	
cis-1,3-Dichloropropene		U	U	U	U	U	U	1	
1,1,2-Trichloroethane		U	U	U	U	U	U	1	
1,3-Dichloropropane		U	U	U	U	U	U	1	
Tetrachloroethene		U	U	U	U	U	U	1	
Dibromochloromethane		U	U	U	U	U	U	1	
1,2-Dibromoethane		U	U	U	U	U	U	1	
Chlorobenzene		U	U	U	U	U	U	1	
1,1,1,2-Tetrachloroethane		U	U	U	U	U	U	1	
Dichlorodifluoromethane		U	U	U	U	U	U	2	
Ethylbenzene		U	U	U	U	U	U	1	
m&p-Xylene		U	U	U	U	U	U	1	

IEA
an Aquarion Company

Client: Ecology & Environment
IEA Job #: CH940242
Project #: T05-9312-601

IEA-ILLINOIS (IL. CERT #100238)
VOLATILE COMPOUNDS
METHOD 524.2 Matrix: WATER
ug / L

Analyte	Lab ID	Method Blank	Client ID				PQL
		VW0302	PW00	PW11	PW200	TRIP BLANK	METHOD BLANK	
		40242	013	014	015	020	VW0302	
Dilution Factor (DF)		1	1	1	1	1	
o-Xylene		U	U	U	U	U	U	1
Styrene		U	U	U	U	U	U	1
Bromoform		U	U	U	U	U	U	1
Isopropylbenzene		U	U	U	U	U	U	1
1,1,2,2 Tetrachloroethane		U	U	U	U	U	U	1
1,2,3 Trichloropropane		U	U	U	U	U	U	2
n-Propylbenzene		U	U	U	U	U	U	1
2-Chlorotoluene		U	U	U	U	U	U	1
1,3,5-Trimethylbenzene		U	U	U	U	U	U	1
4-Chlorotoluene		U	U	U	U	U	U	1
1,2,4-Trimethylbenzene		U	U	U	U	U	U	1
tert-Butylbenzene		U	U	U	U	U	U	1
sec-Butylbenzene		U	U	U	U	U	U	1
1,3-Dichlorobenzene		U	U	U	U	U	U	1
p-Isopropyltoluene		U	U	U	U	U	U	1
1,4-Dichlorobenzene		U	U	U	U	U	U	1
1,2-Dichlorobenzene		U	U	U	U	U	U	1
n-Butylbenzene		U	U	U	U	U	U	1
1,2-Dibromo-3-chloropropane		U	U	U	U	U	U	4
1,2,4-Trichlorobenzene		U	U	U	U	U	U	1
Napthalene		U	U	U	U	U	U	1
Hexachlorobutadiene		U	U	U	U	U	U	1
1,2,3-Trichlorobenzene		U	U	U	U	U	U	1
Sample Received			2/21/94	2/21/94	2/21/94	2/21/94	2/21/94	
Sample Analyzed		3/2/94	3/2/94	3/2/94	3/2/94	3/2/94	3/2/94	

PQL = Practical Quantitation Limit

To obtain sample-specific quantitation limit, multiply the PQL by the Dilution Factor.

IEA
An Aquarion Company

Client: Ecology & Environment
IEA Job#: CH940242
Project #: T05-9312-601

IEA-ILLINOIS (IL. CERT #100238)
VOLATILE COMPOUNDS
METHOD 524.2 Matrix: WATER
ug / L

Analyte	Lab ID	Dilution Factor (DF)	Method Blank	Client ID					PQL	
		1	VW0302	PW00	VW0302	PW11	VW0302	PW200	VW0302	TRIP BLANK	VW0302	METHOD BLANK		
			40242	013	40242	014	40242	015	40242	020	VW0302			
Chloromethane			U		4	u	3	u	2		U		2	NF
Vinyl Chloride			U		U		U		U		U		1	
Bromomethane			U		U		U		U		U		2	
Chloroethane			U		U		U		U		U		2	
Trichlorofluoromethane			U		U		U		U		U		1	
1,1-Dichloroethene			U		U		U		U		U		1	
Methylene Chloride			8	u	6	u	5	u	3		U		1	NF
trans-1,2-Dichloroethene			U		U		U		U		U		2	
1,1-Dichloroethane			U		U		U		U		U		1	
2,2-Dichloropropane			U		U		U		U		U		1	
cis-1,2-Dichloroethene			U		U		U		U		U		1	
1,2-Dichloroethane			U		U		U		U		U		1	
Bromochloromethane			U		U		U		U		U		1	
Chloroform			U		U		U		U		U		1	
1,1,1-Trichlorethane			U		U		U		U		U		1	
Carbon Tetrachloride			U		U		U		U		U		1	
1,2-Dichloropropene			U		U		U		U		U		1	
1,2-Dichloroethane			2		4		3		U		U		1	
Benzene			U		U		U		U		U		1	
Trichloroethene			U		U		U		U		U		1	
1,2-Dichloropropane			U		U		U		U		U		1	
Dibromomethane			U		U		U		U		U		1	
Bromodichloromethane			U		U		U		U		U		1	
Trans-1,3-Dichloropropene			U		U		U		U		U		1	
Toluene			U		U		U		U		U		1	
cis-1,3-Dichloropropene			U		U		U		U		U		1	
1,1,2-Trichloroethane			U		U		U		U		U		1	
1,3-Dichloropropane			U		U		U		U		U		1	
Tetrachloroethene			U		U		U		U		U		1	
Dibromochloromethane			U		U		U		U		U		1	
1,2-Dibromoethane			U		U		U		U		U		1	
Chlorobenzene			U		U		U		U		U		1	
1,1,1,2-Tetrachloroethane			U		U		U		U		U		1	
Dichlorodifluoromethane			U		U		U		U		U		2	
Ethylbenzene			U		U		U		U		U		1	
m&p-Xylene			U		U		U		U		U		1	

IEA

Client: Ecology & Environment
IEA Job #: CH940242
Project #: T05-9312-601

ANALYTE LIST
mg/l

Matrix: Water

Analyte	Method	Client ID	PW102	PW102F	PW101	PW101F	PW98	Date Analyzed	PQL
		Lab ID	940242 001	940242 002	940242 003	940242 004	940242 005		
Calcium	6010		68	–	99	–	110	2/24/94	0.2
Iron	6010		0.064	–	<0.05	–	0.12	2/24/94	0.05
Managanese	6010		<0.015	<0.015	<0.015	<0.015	0.62	2/24/94	0.015
Magnesium	6010		28	–	44	–	58	2/24/94	0.2
Potassium	6010		8.3	–	3.8	–	9.7	2/24/94	1.0
Sodium	6010		43	–	50	–	78	2/24/94	0.2

PQL = Practical Quantitation Limit

IEA
An Aquarion Company

Client: Ecology & Environment
IEA Job#: CH940242
Project #: T05-9312-601

ANALYTE LIST
mg/l

Matrix: Water

	Client ID	PW96	PW94	PW94F	PW94K	PW4		
		940242	940242	940242	940242	940242	Date	
	Lab ID	006	007	008	009	010	Analyzed	PQL
Analyte	Method							
Calcium	6010	120	120	–	–	42	2/24/94	0.2
Iron	6010	<0.05	0.29	–	–	<0.05	2/24/94	0.05
Managanese	6010	0.42	0.063	0.052	<0.015	<0.015	2/24/94	0.015
Magnesium	6010	55	57	–	–	18	2/24/94	0.2
Potassium	6010	2.2	1.9	–	–	3.5	2/24/94	1.0
Sodium	6010	110	30	–	–	29	2/24/94	-0.2

PQL = Practical Quantitation Limit

IEA

Client: Ecology & Environment
IEA Job#: CH940242
Project #: T05-9312-601

ANALYTE LIST
mg/l

Matrix: Water

	Client ID	PW99	PW99F	PW00	PW11	PW200		
		940242	940242	940242	940242	940242	Date	
	Lab ID	011	012	013	014	015	Analyzed	PQL
Analyte	Method							
Calcium	6010	120	–	<0.2	74	72	2/24/94	0.2
Iron	6010	0.96	–	<0.05	<0.05	0.090	2/24/94	0.05
Managanese	6010	0.70	<0.015	<0.015	<0.015	<0.015	2/24/94	0.015
Magnesium	6010	61	–	<0.2	34	33	2/24/94	0.2
Potassium	6010	9.0	–	<1.0	1.8	1.6	2/24/94	1.0
Sodium	6010	84	–	<0.2	44	42	2/24/94	0.2

PQL = Practical Quantitation Limit

IEA
An Aquarian Company

Client: Ecology & Environment
IEA Job#: CH940242
Project #: T05-9312-601

ANALYTE LIST
mg/l

Matrix: Water

	Client ID	PW16	PW73	PW13	PW92			
		940242	940242	940242	940242		Date	
	Lab ID	016	017	018	019		Analyzed	PQL
Analyte	Method							
Calcium	6010	54	85	56	110		2/24/94	0.2
Iron	6010	0.056	0.085	<0.05	<0.05		2/24/94	0.05
Managanese	6010	0.022	<0.015	<0.015	<0.015		2/24/94	0.015
Magnesium	6010	38	42	31	60		2/24/94	0.2
Potassium	6010	2.0	1.7	2.4	2.6		2/24/94	1.0
Sodium	6010	12	20	15	98		2/24/94	0.2

PQL = Practical Quantitation Limit

IEA

An Aquatic Sciences Company

Client: Ecology & Environment
IEA Job #: CH940242
Project #: T05-9312-601

ANALYTE LIST Matrix: WATER

		PW	PW	PW	PW	PW		
	Client ID	102	101	98	96	94		
		940242	940242	940242	940242	940242	Date	
	Lab ID	001	003	005	006	007	Analyzed	PQL
Analyte	Method							
pH Water	150.1	7.7	7.4	7.2	7.4	7.5	2/21/94	–
Total Dissolved Solids	160.1	620	600	820	890	670	2/23/94	4 mg/l
Ammonia	350.2	0.37	<0.05	8.2	<0.05	<0.05	3/4/94	0.05 mg/l
Chloride	325.3	43	96	170	260	93	3/2/94	3 mg/l
Sulfate	375.3	13	23	29	20	39	3/1/94	5 mg/l
Nitrate/Nitrite	353.2	0.52	4.4	0.47	0.06	<0.05	2/24/94	0.05 mg/l
Orthophosphate	365.2	<0.06	<0.06	<0.06	<0.06	<0.06	2/24/94	0.06 mg/l

PQL = Practical Quantitation Limit

IEA
An Aquarion Company

Client: Ecology & Environment
EA Job #: CH940242
Project #: TC5-9312-601

ANALYTE LIST Matrix: WATER

Analyte	Method	Client ID: PW 4 / Lab ID: 940242 010	PW 99 / 940242 011	PW 00 / 940242 013	PW 11 / 940242 014	PW 200 / 940242 015	Date Analyzed	PQL
pH Water	150.1	7.8	7.4	6.3	7.9	7.9	2/21/94	–
Total Dissolved Solids	160.1	550	880	110	490	480	2/23/94	4 mg/l
Ammonia	350.2	<0.05	7.8	<0.05	0.084	<0.05	3/4/94	0.05 mg/l
Chloride	325.3	<3.0	180	<3.0	80	82	3/2/94	3 mg/l
Sulfate	375.3	21	34	<5.0	25	25	3/1/94	5 mg/l
Nitrate/Nitrite	353.2	<0.05	<0.05	<0.05	3.7	3.7	2/24/94	0.05 mg/l
Orthophosphate	365.2	<0.06	<0.06	<0.06	<0.06	<0.06	2/24/94	0.06 mg/l

PQL = Practical Quantitation Limit

IEA

An Aqua-Tech Company

Client: Ecology & Environment
EA Job # C-940242
Project # T05-9312-601

ANALYTE LIST Matrix: WATER

		PW	PW	PW	PW			
	Client ID	16	73	13	92			
		940242	940242	940242	940242		Date	
	Lab ID	016	017	018	019		Analyzed	PQL
Analyte	Method							
pH Water	150.1	7.8	7.8	7.8	7.7		2/21/94	–
Total Dissolved Solids	160.1	440	510	400	870		2/23/94	4 mg/l
Ammonia	350.2	<0.050	0.084	0.46	0.084		3/4/94	0.05 mg/l
Chloride	325.3	26	47	<3.0	280		3/2/94	3 mg/l
Sulfate	375.3	39	25	42	41		3/1/94	5 mg/l
Nitrate/Nitrite	353.2	0.14	1.6	0.25	0.73		2/24/94	0.05 mg/l
Orthophosphate	365.2	<0.06	<0.06	<0.06	<0.06		2/24/94	0.06 mg/l

PQL = Practical Quantitation Limit